



A.D. 1865, 25th APRIL. N^o 1152.

S P E C I F I C A T I O N

OF

RICHARD ARCHIBALD BROOMAN.

SMOKE-CONSUMING FURNACES.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

25, SOUTHAMPTON BUILDINGS, HOLBORN.



A.D. 1865, 25th APRIL. N^o 1152.

Smoke-consuming Furnaces.

(This Invention received Provisional Protection only.)

PROVISIONAL SPECIFICATION left by Richard Archibald Brooman at the Office of the Commissioners of Patents, with his Petition, on the 25th April 1865.—A communication from abroad by Etienne Sauret and Eugene de Fleury, of Relanges, France.

5 I, RICHARD ARCHIBALD BROOMAN, of 166, Fleet Street, in the City of London, Patent Agent, do hereby declare the nature of the said Invention for “IMPROVEMENTS IN SMOKE-CONSUMING FURNACES,” to be as follows:—

The object of this Invention is to construct furnaces in which the smoke is burnt at the moment of or immediately after its formation. The Invention
10 mainly consists in the employment of supplementary fire-places of special construction, in which the combustion is effected, by air forced in by a fan or otherwise, and in the formation of lateral air chambers or arches, by which the air is introduced to facilitate combustion, and to inflame the gases at the upper part of the supplementary fire-places.

15 I proceed to explain by way of example the manner in which I apply the Invention to a furnace for heating a boiler with two boiling vessels. On each side of the ordinary fire-bars I form in the masonry an air chamber or longitudinal arch of fire-brick or refractory material, below each air chamber I construct another chamber, which is supplied with fuel, and constitutes a
20 supplementary fire-place. From the lower part of each supplementary fire-place a pipe leads to another pipe common to both fire-places, and through which a current of air is propelled by a fan or otherwise. The ordinary fire-place communicates with the supplementary fire-places by a series of trans-

Brooman's Improvements in Smoke-consuming Furnaces.

verse passages, through which the flame from the supplementary fire-places passes to lick the boiler. A pipe supplies air to the air chambers, and passages lead this air from the air chambers into the upper part of the supplementary fire-places. The pipes which lead from the lower part of the fire-places can be removed when required to clear out cinders or otherwise. Each of the 5 supplementary fire-places is formed of two different depths, the portion at the front being deeper than that at back, and the amount of fuel employed depends upon the position of the bridge between the two portions. The working is as follows:—Fuel is supplied to the supplementary fire-places through doors in the front of the furnace, the shallower portion behind the 10 bridge may receive a certain quantity of fuel, so that the coal thereon in contact with the fire of the other portion may be distilled, the gases are inflamed for the whole length of these fire-places, and the flame impelled by the fan passes through the transverse passages to heat the boiler, thus the air forced in through the pipe is diffused under the fuel to effect the combustion 15 by forming oxide of carbon, which gives first CO^3 , then CO^2 ; but at the same time the combustion of the gases at the upper part of the supplementary fire-places is effected by their combination with the air from the air chambers.

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1865.